

PUBLIC HEALTH REPORTS

VOL. 52

FEBRUARY 19, 1937

NO. 8

CURRENT PREVALENCE OF COMMUNICABLE DISEASES IN THE UNITED STATES¹

January 3-30, 1937²

The prevalence of certain important communicable diseases, as indicated by weekly telegraphic reports from State health departments to the United States Public Health Service, is summarized in this report. The underlying statistical data are published weekly in the Public Health Reports, under the section entitled "Prevalence of Disease."

Influenza.—The small outbreak of influenza which occurred during the month of January is comparable in size to the epidemic of the winter of 1932-33. Mortality from influenza and pneumonia in 95 large cities of the United States showed a maximum excess, for the week of January 3-9, of 146 per 1,000 over that for the corresponding week of 1934, a year of average influenza incidence. During the minor epidemic of the winter of 1932-33 the corresponding maximum excess for all cities was 164 per 1,000.

In each section of the country mortality from influenza and pneumonia has been above the seasonal expectancy—the highest above in the West North Central, Mountain, and Pacific areas (table 1). The week of maximum excess was January 10-16 in the West North Central and Mountain sections and January 17-23, the last week for which mortality data are available, in the Pacific area.

Approximately 100,000 cases of influenza were reported in the United States in excess of seasonal expectancy during the month of January. For the week of January 31-February 6 the number of reported cases for the country as a whole was, for the first time since the epidemic started, less than that for the preceding week. Only the New England, South Atlantic, and West South Central sections show a slight increase during the week of January 31-February 6 over the number reported for the preceding week.

¹ From the Office of Statistical Investigations, U. S. Public Health Service.

These summaries include only the 8 important communicable diseases for which the Public Health Service receives weekly telegraphic reports from the State health officers. The numbers of States included for the various diseases are as follows: Typhoid fever, 48; poliomyelitis, 48; meningococcus meningitis, 48; smallpox, 48; measles, 46; diphtheria, 48; scarlet fever, 48; influenza, 44 States and New York City. The District of Columbia is counted as a State in these reports.

² The data contained in these reports are based upon thirteen 4-week periods with the first week in each year ending between the 4th to the 10th of January. This of necessity makes an extra week in an occasional year over a period of years, as was the case in 1936. The first week used in the current 4-week period ended Jan. 9, that being the first 7-day week in 1937.

Mortality from all causes in 85 large cities reached a maximum of 15.8 per 1,000 during the week of January 3-9. Since January 9 the death rate has declined slowly. However, for the week ended February 6, mortality was still above seasonal expectancy—14.4 per 1,000 as compared with 12.3 for the corresponding week of 1934. In those sections in which mortality from influenza and pneumonia has shown a marked increase over normal, the death rate from all causes has dropped practically to normal for the last week for which data are available. In the New England, South Atlantic, and West South Central regions mortality from all causes has increased somewhat for the week ended February 6.

Number of cases of influenza and death rates from influenza and pneumonia and from all causes in each geographic area by weeks from Jan. 3 to Feb. 6, 1937¹

Regions	Week ended—												
	Jan. 9	Jan. 16	Jan. 23	Jan. 30	Feb. 6	Jan. 9	Jan. 16	Jan. 23 ²	Jan. 9	Jan. 16	Jan. 23	Jan. 30	Feb. 6
	Number of reported cases in States					Death rate (annual basis) from influenza and pneumonia in 95 large cities, per 1,000 population				Death rate (annual basis) from all causes in 85 large cities per 1,000 population			
All regions: 1937.....	12,145	23,270	35,953	36,742	32,078	307	202	270	15.8	15.4	14.8	14.9	14.4
1934 ³	2,061	2,804	1,943	2,201	2,714	161	159	151	13.0	12.8	12.3	12.2	12.3
New England: 1937.....	108	1,102	1,363	1,368	2,231	238	279	200	15.8	15.5	15.4	15.4	17.4
1934.....	35	21	14	44	6	190	177	189	15.7	15.8	14.7	13.8	13.5
Middle Atlantic: 1937.....	1,901	1,271	788	371	236	293	299	260	15.3	15.1	14.4	14.0	13.1
1934.....	48	42	51	55	56	153	154	138	13.0	12.6	11.9	12.1	12.0
East North Central: 1937.....	1,467	2,445	3,500	2,589	1,849	324	246	171	14.7	13.2	11.5	11.9	12.2
1934.....	143	250	163	166	301	128	145	130	11.2	11.7	10.5	10.3	11.2
West North Central: 1937.....	4,535	7,907	9,007	6,729	4,747	372	464	449	17.7	19.0	18.7	16.7	15.2
1934.....	27	30	46	69	73	258	209	232	13.9	12.9	15.2	13.7	13.4
South Atlantic: 1937.....	921	1,120	2,934	2,338	3,421	302	318	298	18.7	18.7	16.5	17.5	17.9
1934.....	1,102	809	926	1,088	2,111	194	210	228	16.9	16.1	16.0	16.6	15.4
East South Central: 1937.....	568	1,656	1,145	1,119	1,334	300	209	289	17.2	15.4	15.0	14.3	17.8
1934.....	168	127	212	309	326	217	149	54	13.7	15.0	12.7	15.0	14.5
West South Central: 1937.....	1,226	2,076	3,750	4,039	6,301	284	262	321	14.4	15.2	15.1	16.4	17.4
1934.....	400	1,415	453	388	609	220	164	208	15.4	13.5	14.6	14.6	13.8
Mountain: 1937.....	1,058	3,590	4,607	5,604	2,656	813	936	618	29.1	28.4	27.5	22.7	16.8
1934.....	38	31	19	30	61	120	189	137	13.6	14.9	14.8	14.9	16.0
Pacific: 1937.....	361	2,004	8,760	12,495	9,303	179	154	320	16.2	16.8	19.0	21.6	17.9
1934.....	90	79	59	72	71	111	117	97	13.3	12.5	13.1	12.2	12.4

¹ For similar tables see PUBLIC HEALTH REPORTS for Jan. 15, 1937, p. 68; Jan. 29, p. 126; and Feb. 12, p. 190.

² The latest data available.

³ No reports were received from Massachusetts, Mississippi, Nevada, up-State New York, Pennsylvania, Vermont, and Virginia, nor from Kentucky in 1937 since the week ended January 10. New York City is included.

⁴ Reported cases for the corresponding weeks of 1934, the winter of 1933-34 being one of average influenza incidence.

Smallpox.—Smallpox continued unusually prevalent in the North Central regions. Of the total of 1,144 cases for the entire reporting area, 194 occurred in the East North Central region and 621 (279 in Missouri) in the West North Central region. New York State reported 46 cases for the current 4-week period, as compared with none for the corresponding period since 1932. Owing largely to the high incidence in the North Central and Mountain and Pacific regions, the incidence of smallpox for the country as a whole has shown a gradual increase since 1934. The total numbers of cases for the periods corresponding to the current one were as follows: 498 in 1934, 757 in 1935, and 865 in 1936.

Scarlet fever.—Reports indicate that the incidence of scarlet fever might be slightly above the seasonal expectancy. While the number of cases (23,617) for the current 4-week period was only about 80 percent of the figure for the corresponding period in 1936, and about 90 percent of that for 1935, the average for this period in the 6 preceding years was approximately 20,000 cases. During the latter part of December 1934 a rise in scarlet fever became apparent, particularly in the East North Central region, and spread over practically all sections of the country. In each section the incidence has dropped from the high levels reached during the past 2 years, but the South Atlantic region is the only one in which the number of cases has dropped below the average for several preceding years.

Meningococcus meningitis.—For the current 4-week period 542 cases of meningococcus meningitis were reported. Although the number is approximately 20 percent less than the figure for the corresponding period in 1936, it is about twice the number reported for this period in 1934 and 1935. Nearly a 40-percent excess in cases over last year was reported from the South Atlantic region, but in all other regions the disease was less prevalent. The incidence of meningitis stood at a relatively high level during the year 1936.

Measles.—The number of cases (16,688) of measles reported during the 4 weeks ended January 30 was the lowest for this period in the 9 years for which these data are available. Of the various geographic regions, the New England, Middle Atlantic, South Atlantic, and South Central regions reported slight increases over the totals for the corresponding period in 1936, but the North Central, Mountain, and Pacific regions reported the lowest incidence in recent years.

Diphtheria.—For the entire reporting area, diphtheria continued at a low level. For the current 4-week period 2,489 cases were reported, as compared with 3,001, 3,385, and 4,259 for the corresponding period in the years 1936, 1935, and 1934, respectively. Each geographic region, except the South Atlantic, reported the lowest incidence in recent years. In the South Atlantic region the number of cases (609)

represented an increase over each of the 2 preceding years and was only slightly below the average for the years 1929-34, inclusive.

Typhoid fever.—The incidence of typhoid fever (487 cases) was slightly higher than during the corresponding period in 1936. The increase was due largely to increases in only a few States. Texas reported 51 cases as compared with 18 for this period last year, Louisiana 129 as compared with 14, Maine 27 as compared with 1, and Tennessee 21 as compared with 8. The incidence in relation to that of last year was high in the North Atlantic and South Central regions, where the States mentioned are located, but in other regions the number of cases was about on a level with that of last year. For the entire reporting area the excess over last year was about 12 percent; in the years 1935 and 1934 the numbers of cases for this period totaled 629 and 658, respectively.

Poliomyelitis.—The incidence of poliomyelitis stood at about the average level of recent years. For the 4 weeks ended January 30 a total of 100 cases was reported, as compared with 77, 118, and 98 for the corresponding period in the years 1936, 1935, and 1934, respectively. While the number of cases (28) reported by the South Central States was not especially high, it appeared to be slightly above the seasonal expectancy. In other regions the incidence was about normal.

Mortality, all causes.—The average mortality rate from all causes in large cities for the 4 weeks ended January 30, based on data received from the Census Bureau, was 15.2 per 1,000 inhabitants (annual basis), as compared with 13.4, 13.3, and 12.8 for the corresponding period in the years 1936, 1935, and 1934, respectively. The current rate represents an excess of 2.0 per 1,000 over the average for the 3 preceding years. The excess is accounted for by the comparatively high death rate from influenza and pneumonia.

PULMONARY TUMORS IN MICE

I. The Susceptibility of the Lungs of Albino Mice to the Carcinogenic Action of 1, 2, 5, 6-Dibenzanthracene¹

By H. B. ANDERVONT, *Biologist, United States Public Health Service, Office of Cancer Investigations, Harvard Medical School*

It has been known for years that the cutaneous application of tar or tar products induces pulmonary tumors in mice. Murphy and Sturm (30) first demonstrated this carcinogenic action of tar by an ingenious experiment in which they painted 12 different areas on each mouse in rotation. Each area was painted three times, so that each animal received 36 applications of a coal-tar distillate over a period of 83 days. In three such experiments they painted over 60

¹ From the Office of Cancer Investigations, U. S. Public Health Service, Harvard Medical School, Boston, Mass.

mice, of which 40 survived or were killed 1 to 6 months after the last tar application, and of these 85 percent had lung tumors. As controls, they set aside 38 untreated mice of the same stock which they killed at the same time that they killed the experimental mice. None of the controls had lung tumors. Murphy and Sturm discuss the appearance of spontaneous lung tumors in their stocks and state that—

It is rare to find a lung tumor in animals 12 months old or younger, while the highest rate comes between 26 and 29 months of age. In case of two special strains, with a lung tumor rate of between 59 and 70 percent, in only one instance has a tumor occurred in a mouse as young as 13 months, while the average age is about 20 months.

Since the oldest experimental mouse they killed was 13 months of age, it is obvious that all were below the age at which tumors occurred normally in even the high lung tumor strains.

The authors suggest two possibilities as regards the appearance of lung tumors. The first postulates that tar particles are carried to the lungs after entering the body through the skin or by way of the alimentary tract; the second is best stated in their own words, as follows: "Tar painting so alters the body state that tumors occur at points of incidental irritation at which under ordinary circumstances they would not develop." They are inclined to favor the second possibility.

Results similar to those of Murphy and Sturm have been obtained in many laboratories. Dreifuss and Bloch (16) found tumors in the lungs of tarred mice and considered them metastases or primary tumors. DeJongh (15) records the appearance of lung tumors in mice bearing induced or transplanted tar tumors. Bonne (6, 7, 8, 9) gave the problem special consideration and confirmed the findings of Murphy and Sturm. In 300 tarred mice of 5 to 23 months of age he found 40 with lung growths, while in 146 untreated controls of the same age he found 12 with lung tumors. No lung tumors were found in 59 of the untarred controls which were less than 1 year of age, while 14 of 227 tarred mice developed lung tumors before they were 1 year old. Because he found spontaneous pulmonary tumors in his control animals he was inclined to believe that tarring hastened a process which had already begun.

Lynch (19, 20, 21, 22) found that tar painting increased the incidence of lung tumors in various strains of mice. The results obtained by tar painting the offspring of certain backcross breeding experiments showed that the susceptibility to induced lung tumors was hereditary. In discussing the origin of lung tumors in tarred mice, Lynch (20) states that "It is probable that the tar treatment plays the same rôle of excitant in the production of lung tumor that breeding does in the instance * * * of mammary gland tumor."

While studying the systemic and local effects of tar painting in mice, Schabad (32, 33, 34, 35) also found that lung tumors arose more frequently in tarred than in normal mice of his strains. In a recent publication (36) he summarizes his findings and considers the origin of lung tumors as being the result of a "general blastogenic action" of the carcinogenic substance.

Die Entstehung von Tumoren in einem fern von der Einführungsstelle liegenden Organ, ihre grosse Häufigkeit bei vollständiger Abwesenheit solcher Geschwülste bei Kontrollmäusen desselben Stammes und das frühe Auftreten der Adenome—kann nur durch die Annahme einer allgemeinen blastogenen Wirkung des einge-führten kanzerogenen Stoffes erklärt werden.

Mercier (26, 27, 28, 29) records the appearance of massive lymphadenoma of the lung in 10 of 104 mice of a certain strain, of which 36 had been given intraperitoneal injections of tar in olive oil. Six of the tumors arose in the 36 tar-treated animals, while the remaining 4 appeared in the 68 untreated mice. The tumors appeared within 8 to 11 months in each group, indicating that tar did not hasten the appearance of tumors as is the case in tar-painted mice. The difference between the rate of appearance of tumors in the treated and control mice in this group is not sufficient to eliminate the possibility that all tumors arose spontaneously. Koose and Cordes (17) tarred the skin of 690 mice and induced lung tumors in 40 while no tumors occurred in over 700 controls. They offer the suggestion that an agent such as bacteriophage or a product of cellular activity is carried to the lungs from the tarred area and causes tumors. Watson and Mellanby (41) produced skin tumors in 264 mice by tar painting and found that 52.4 percent contained "typical" nodules of the lung. They say that "In the majority of cases the lung nodules of the mice with skin tumours consist of squamous epitheliomata, secondary to the primary tumour, or primary epithelial lung tumours of an adenomatous type." They found lung tumors in 6 percent of their normal untarred mice. Cirio and Balestra (18) found tumors in the lungs of mice after irradiation plus tarring or after tarring alone. In discussing the results of a series of tar-painting experiments Rous and Botsford (31) mention that the appearance of lung tumors in mice was "not rare"! Kreyberg (18) used 975 mice of his "White Label" strain for tar painting, but does not comment upon the occurrence of lung tumors, although a chart shows that lung adenoma arose in some of these animals.

Campbell (10, 11) exposed mice to air laden with dust obtained from the sweepings of tarred roads; and of 100 mice which inhaled the dust, 71 developed primary lung tumors while similar tumors arose in only 7 of 90 unexposed controls. His results are of interest because they show that, in mice, direct contact of tar with lung tissue induces tumor formation. Seelig and Benignus (38) kept 100 mice in a bedding of soot and found 8 lung tumors when the animals came to autopsy.

The ages of these mice ranged from 12 to 21 months when the lung tumors were observed. In 50 controls they found one animal with a spontaneous pulmonary tumor.

Other investigators have failed to find lung tumors in mice after tar painting. For example, Cramer (14), of the Laboratories of the Imperial Cancer Research Fund, reports that "In the induction of cancer by tar-painting the tumour appears almost without exception in the painted areas. In the large number of experiments of tar-painting in mice in this laboratory only three instances have occurred when a tumour appeared outside of the area actually painted."

In this laboratory (1, 2) it has been found that lung tumors appear in certain mice following the subcutaneous injection of a lard-dibenzanthracene solution. Schabad (37) and Lynch (23) have obtained similar results with 1, 2, 5, 6-dibenzanthracene. Shear (39) found lung nodules in mice after a subcutaneous injection of crystalline 8, 9-dimethylene-1, 2-benzanthracene. The appearance of pulmonary tumors following subcutaneous injection may be of significance, for in these experiments there is no known opportunity for the inhalation or ingestion of the carcinogenic compound.

In a previous communication (2) it was stated that with few exceptions, the induced lung tumors arose in albino mice regardless of whether the animals were members of a highly inbred strain or ordinary "market mice". A review of the literature pertaining to the production of lung growths in mice by tar or 1, 2, 5, 6-dibenzanthracene reveals that most of the investigators who describe the coat color of their experimental animals employed albinos. Dreifuss and Bloch (16), deJongh (15), Bonne (6), Schabad (32), Koose and Cordes (17), Cirio and Balestra (13), Rous and Botsford (31), Kreyberg (18), Seelig and Benignus (38), and Shear (39) record that albino mice were used in their investigations. Lynch obtained lung tumors in both colored and albino mice, but the albino stock exhibited a much higher rate than the colored. Campbell (12) also used colored mice but states that "We have used a large proportion of white mice distributed throughout the groups." Murphy and Sturm, Mercier, Watson and Mellanby did not record the color of their mice.

It is also pertinent to mention that Lynch (24, 25) and Bittner (5) have described strains of albino mice which have a high incidence of spontaneous pulmonary tumors. Of course, albino coat color *per se* cannot be responsible for the appearance of lung tumors, for Tyzzer (40) in one of his earliest reports concerning the spontaneous occurrence of these growths, records their appearance in colored mice, and the work of Lynch has shown that they may be induced in colored mice. In this laboratory (3) lung tumors have appeared in mice of black coat color following subcutaneous injection of a lard-dibenzanthracene solution. These animals were the offspring of crossbreeding

between pure strains of albino and black mice. It may be said, however, that up to the present time experimental evidence indicates that albino mice or their offspring are more susceptible to the development of spontaneous or induced lung tumors than are colored mice. Further investigations are necessary before any significance can be attached to this observation. It is not impossible that the albino mice used in laboratories throughout the world are distantly if not closely related.

It has been noted that practically all investigators have found spontaneous growths in the lungs of control mice belonging to the stocks which proved to be susceptible to pulmonary growths induced by tar painting. These findings imply that lung tumors can be induced more frequently in those strains which possess a tendency to develop them spontaneously. Pure strain mice obtained from the Roscoe B. Jackson Memorial Laboratory have been used in studies pertaining to the appearance of induced lung growths in this laboratory. Mice of strains A, D, M, Y, C₅H, CBA, C₅₇ Black, and C₅₇ Brown have been given subcutaneous injections of lard-dibenzanthracene solution, and thus far the lungs of only strain A mice have proved to be very susceptible to this carcinogenic agent. Furthermore, these mice are the only strain of this series which are known to exhibit a high rate of spontaneous lung tumors. Bittner (5) has published the most complete data on the occurrence of spontaneous lung growths in strain A mice. He found that of 126 virgin females 77 percent developed pulmonary growths, the average age at autopsy being 16.6 months. Of 116 breeding males, 71.6 percent possessed lung growths when coming to autopsy at an average age of 14.8 months. It would appear that, as in the case of tar-induced lung tumors, the test animals must possess a special organ susceptibility to tumor growth before the carcinogenic hydrocarbon is able to elicit lung tumors in any considerable number. However, a method has been devised in this laboratory (4) whereby lung tumors have been induced in a significant percentage of mice belonging to a strain which exhibits few, if any, spontaneous lung tumors.

The fact that carcinogenic substances evoke lung tumors more frequently in those mice which possess a tendency to develop them spontaneously creates special problems as regards adequately controlled experiments. The obvious procedure is to employ mice which are below the age incidence at which the spontaneous growths appear, and most investigators have taken this precaution. In this laboratory the rule has been to use only those mice of strain A which will be from 7 to 8 months of age at the conclusion of the experiment. The manner in which such investigations have been controlled is best shown by presenting brief protocols of two experiments.

Experiment 1

On April 18, 1935, 40 strain A females of approximately 2 months of age received a subcutaneous injection of a lard-dibenzanthracene solution in the right axillary region. The injected material contained 4 mg of 1, 2, 5, 6-dibenzanthracene to each cubic centimeter of lard and each mouse received 0.2 cc of the solution. Twenty-one female mice of the same lot were set aside as controls. The injections were repeated on April 26, 1935.

The first subcutaneous tumor appeared on August 15, 1935. As the injected mice developed subcutaneous tumors or died from other causes, they were examined macroscopically for the presence of lung tumors. The last 7 injected mice were killed on November 22, 1935, approximately 7 months after the first injection. None of these animals had developed a subcutaneous tumor, but all exhibited a large number of lung nodules.

From November 22, 1935, to December 3, 1935, groups of the uninjected controls were killed and examined for lung tumor. Four of them had pulmonary tumors which, in each instance, consisted of a single nodule about 2 mm in diameter. In contrast to these single growths, practically all the lungs of the injected mice contained numerous nodules, showing that the carcinogenic agent increased the number of lung tumors and accelerated their appearance in this strain of mice. The results of the experiment are summarized in table 1.

TABLE 1.—*Experiment 1: The response of strain A mice to the subcutaneous injection of 1.6 mg of 1, 2, 5, 6-dibenzanthracene in a lard solution*

	Number of mice used	Number which developed subcutaneous tumor only	Number which developed both subcutaneous tumor and lung tumors	Number which developed lung tumors only	Number which died or were killed without tumors
Injected mice.....	40	10	18	7	5
Control mice.....	21	0	0	4	17

Experiment 2

Albino female mice purchased from a local dealer and not of a pure strain were used in this investigation. Their exact age was not known, but they were young adults averaging 20 g in weight. On June 12, 1935, 55 mice each received 0.2 cc of a lard-dibenzanthracene solution in the right axillary region. The lard contained 4 mg of 1, 2, 5, 6-dibenzanthracene to each cc. Thirty-four mice of the same shipment were set aside as controls. The injections were repeated on June 21, 1935.

The first tumor appeared on September 12, 1935. As in experiment 1, the mice developing subcutaneous tumors or dying from other

causes were examined macroscopically for the presence of lung growths. On December 12, 1935, 19 of the injected mice were alive. These were killed and autopsies performed. One had a subcutaneous tumor only, 1 had both a subcutaneous tumor and lung tumors, 10 had lung nodules only and 7 were negative in both axilla and lungs. The control mice were killed in three equal groups—the first on November 14, 1935, the second on November 26, 1935, and the last on December 12, 1935. Only one of these controls had a pulmonary tumor, a single lung nodule 3 mm in diameter. As in experiment 1, the lungs of the injected mice contained numerous nodules. The results of this experiment are presented in table 2.

TABLE 2.—*Experiment 2: The response of stock albino mice to the subcutaneous injection of 1.6 mg of 1, 2, 5, 6-dibenzanthracene in a lard solution*

	Number of mice used	Number which developed subcutaneous tumor only	Number which developed both subcutaneous tumor and lung tumors	Number which developed lung tumors only	Number which died or were killed without tumor
Injected mice.....	55	8	27	11	9
Control mice.....	34	0	0	1	33

It is seen that in both of these investigations only lung tumors were present in most of the injected mice killed at the conclusion of the experiments. This finding suggested that the lungs of these albino mice may have been more susceptible to the carcinogenic action of 1, 2, 5, 6-dibenzanthracene than the subcutaneous tissue. Two experiments have been performed and the results show that, so far as strain A mice were concerned, subcutaneous injection of the carcinogenic agent evoked lung tumors earlier than subcutaneous tumors. These experiments are described below.

Experiment 3

Forty female strain A mice and 30 female strain M mice approximately 3 months of age were used. On April 24, 1936, each of these animals received a subcutaneous injection in the right axillary region of 0.25 cc of lard containing 1 mg of 1, 2, 5, 6-dibenzanthracene. The injection was repeated on May 8, 1936.

May 25, 1936: Three strain A and three strain M mice were killed and autopsies performed. All were tumor free.

June 24, 1936: Three more mice of each strain were killed. The lungs of one strain A mouse contained a single lung nodule. The other 5 animals were tumor free.

July 9, 1936: Three strain A and three strain M mice were killed. All three strain A animals had numerous small nodules in their lungs. The strain M mice had no tumors in any organ.

July 27, 1936: Three more mice of each strain were killed. All three strain A mice had many lung nodules, while all three strain M animals were tumor free.

August 10, 1936: Two mice of each strain were killed. Again both strain A mice had multiple lung nodules, while both strain M mice were free from tumor.

On August 7, 1936, the first definite subcutaneous tumor was palpable in a strain A mouse. All surviving mice were killed on August 24, 1936, at which time 23 strain A and 16 strain M animals were alive. The results of these autopsies are presented below:

	Strain A mice	Strain M mice
No tumor in either subcutaneous tissue or lungs.....	1	9
Lung tumors only.....	18	0
Subcutaneous tumors only.....	0	7
Tumors in both subcutaneous tissue and lungs.....	4	0

From the above summary it is seen that 22 of the 23 strain A mice had lung tumors, while only 4 had a subcutaneous growth at the site of injection. These results show that, following subcutaneous injection of a lard-dibenzanthracene solution, the lungs of most strain A mice developed multiple tumors before a tumor arose in the tissues at the site of injection. Another experiment has been conducted which is presented as further evidence along these lines.

Experiment 4

Twenty-six strain A female mice, approximately 3 months old, were used as test animals. On August 9, 1936, each animal received 0.2 cc of a lard-dibenzanthracene solution in the subcutaneous tissue of the right axillary region. The solution contained 4 mg of 1, 2, 5, 6-dibenzanthracene to each cc of lard; thus, each mouse received 0.8 mg of 1, 2, 5, 6-dibenzanthracene. One mouse died on August 29, 1936, and no tumors were visible in its lungs. Another died on October 8, 1936, and its lungs were also negative when examined macroscopically.

On November 6, 1936, 16 of the mice were killed and examined for the presence of tumors at the site of injection and in the lungs. None had a tumor in the subcutaneous tissue, one was negative in both lungs and subcutaneous tissue, one had a single lung nodule, and the remaining 14 exhibited numerous lung growths. The remaining 8 mice were killed and autopsies performed on November 14, 1936. All had multiple pulmonary nodules but showed no evidence of tumor at the site of injection. The results may be summarized as follows: Of 28 strain A female mice which had received a single subcutaneous injection of 0.8 mg of 1, 2, 5, 6-dibenzanthracene in lard, 26 were alive 3 months later, and of these, all but one exhibited lung tumors while none had developed a subcutaneous growth.

DISCUSSION

In these experiments mice of strain A were given subcutaneous injections of a lard-dibenzanthracene solution. It was found that more of these animals developed lung tumors than subcutaneous tumors and, in addition, that the lung tumors arose earlier than did the subcutaneous growths. Hence it would appear that the lungs of these mice were more delicate test objects than the subcutaneous tissues for the carcinogenic activity of 1, 2, 5, 6-dibenzanthracene.

The reason for the appearance of lung tumors in mice painted with tar or injected with carcinogenic compounds is unknown. The observations recorded in this paper indicate that in strain A mice the lung response occurred in a relatively short period of time. While it does not appear likely that 0.8 mg of 1, 2, 5, 6-dibenzanthracene in 0.2 cc of lard was capable of altering the body state of mice to such an extent that lung tumors arose so much earlier than under normal conditions, it is not impossible that very small amounts of a carcinogenic agent left the site of injection and came into contact with the tissues of an organ which are known to be extremely susceptible to tumor growth.

REFERENCES

- (1) Andervont, H. B.: *Pub. Health Rep.*, **49**: 620 (1934).
- (2) Andervont, H. B.: *Pub. Health Rep.*, **50**: 1211 (1935).
- (3) Andervont, H. B.: In press.
- (4) Andervont, H. B., and Lorenz, E.: In press.
- (5) Bittner, J. J.: *Am. J. Cancer*, **27**: 519 (1936).
- (6) Bonne, C.: *Ned. Tijd. v. Geneesk.*, **70** (2): 1040 (1926).
- (7) Bonne, C., and Stoel, G.: *Compt. rend. Soc. de Biol.*, **94**: 649 (1926).
- (8) Bonne, C.: *Ned. Tijd. v. Geneesk.*, **71** (1): 3314 (1927).
- (9) Bonne, C.: *Ztschr. f. Krebsforsch.*, **25**: 1 (1927).
- (10) Campbell, J. A.: *Brit. J. Exp. Path.*, **15**: 287 (1934).
- (11) Campbell, J. A.: *Lancet*, **1**: 233 (1934).
- (12) Campbell, J. A.: *Quart. J. Exp. Physiol.*, **24**: 271 (1935).
- (13) Cirio, L., and Balestra, G.: *Pathologica*, **23**: 755 (1931).
- (14) Cramer, W.: *Brit. J. Exp. Path.*, **7**: 1 (1926).
- (15) deJongh, S. E.: *Ned. Tijd. v. Geneesk.*, **68** (1): 127 (1924).
- (16) Dreifuss, W., and Bloch, B.: *Arch. f. Dermatol. u. Syph.*, **140**: 6 (1922).
- (17) Koose, W., and Cordes, E.: *Beit. z. klin. Chir.*, **145**: 692 (1929).
- (18) Kreyberg, L.: *Am. J. Cancer*, **24**: 554 (1935).
- (19) Lynch, C. J.: *J. Exp. Med.*, **46**: 917 (1927).
- (20) Lynch, C. J.: *J. Cancer Res.*, **12**: 318 (1928).
- (21) Lynch, C. J.: *Proc. Soc. Exp. Biol. and Med.*, **31**: 215 (1933).
- (22) Lynch, C. J.: *Am. J. Clin. Path.*, **6**: 293 (1936).
- (23) Lynch, C. J.: *Proc. Soc. Exp. Biol. and Med.*, **33**: 401 (1935).
- (24) Lynch, C. J.: *J. Exp. Med.*, **43**: 339 (1926).
- (25) Lynch, C. J.: *J. Exp. Med.*, **54**: 747 (1931).
- (26) Mercier, L.: *Compt. rend. Soc. de Biol.*, **102**: 503 (1929).
- (27) Mercier, L., and Gosselin, L.: *Compt. rend. Soc. de Biol.*, **104**: 54 (1930).
- (28) Mercier, L.: *Compt. rend. Soc. de Biol.*, **103**: 125 (1930).
- (29) Mercier, L.: *Compt. rend. Acad. de Sc.*, **191**: 1083 (1930).
- (30) Murphy, J. B., and Sturm, E.: *J. Exp. Med.*, **42**: 693 (1925).
- (31) Rous, P., and Botsford, E.: *J. Exp. Med.*, **55**: 247 (1932).
- (32) Sehabad, L. M.: *Ztschr. f. Krebsforsch.*, **30**: 24 (1929).
- (33) Sehabad, L. M.: *Ztschr. f. Krebsforsch.*, **31**: 621 (1930).

(34) Schabad, L. M.: *Acta Cancrologica*, **1**: 55 (1934).
 (35) Schabad, L. M.: *Acta Cancrologica*, **1**: 335 (1935).
 (36) Schabad, L. M.: "Las Ciencias", Librería y Casa Editora de A. Guidi
 Buffarini Junín 845, Buenos Aires (1935).
 (37) Schabad, L. M.: *Ztschr. f. Krebsforsch.*, **42**: 295 (1935).
 (38) Seelig, M. G., and Benignus, E. L.: *Am. J. Cancer*, **28**: 96 (1936).
 (39) Shear, M. J.: *Am. J. Cancer*, **28**: 334 (1936).
 (40) Tyzzer, E. E.: *Fourth Report of the Caroline Brewer Croft Fund Cancer
 Commission*, Boston, Mass. (1907).
 (41) Watson, A. F., and Mellanby, E.: *Brit. J. Exp. Path.*, **11**: 267 (1930).

THE DETERMINATION OF MERCURY IN CARROTED FUR ¹

By F. H. GOLDMAN, *Associate Chemist, United States Public Health Service*

In the course of an investigation of chronic mercurialism in the hatters' fur-cutting industry,² it was found necessary to analyze samples of fur dust. At an early stage in the process of preparing the fur of rabbits and hares for the subsequent manufacture of felt hats, the pelts are treated with a solution made by dissolving mercury in nitric acid. This process, called carroting, appears to alter the physical properties of the fur so that it mats together under the application of moisture, heat, and pressure to form a firm felt. Workmen who handle carroted fur are exposed not only to mercury vapor arising from the treated fur, but also to quantities of mercury-impregnated dust. To obtain a measure of the amounts of mercury contained in dust suspended in the air of workrooms, samples were collected by drawing 2 cubic meters of air through 100 cc of an alcohol-water mixture (1: 3) in an impinger.³ In all, 130 samples were collected, and each sample contained, on the average, 0.3 mg of mercury.

This problem presented two important aspects: First it was necessary to destroy the organic matter (which consisted mainly of fur) and obtain a homogeneous solution; then it was necessary to find a chemical method of analysis. Procedures requiring prolonged heating cause the loss of appreciable quantities of mercury. However, by using potassium permanganate and sulphuric acid and heating for a relatively short time it was found that the loss of mercury was very small and could be detected only by spectrographic methods. In control samples containing 0.02 mg of mercury and treated by this method the mercury could be estimated without loss.

The samples treated in this way were then prepared for electrolyzing and the mercury was plated out as described by Fraser.⁴

¹ From the Industrial Hygiene Laboratory of the Office of Industrial Hygiene and Sanitation, U. S. Public Health Service.

² Bloomfield, J. J., and DallaValle, J. M.: The application of engineering surveys to the hatters' fur-cutting industry. *Am. J. Pub. Health*, **27** (1937). (In press.)

³ Bloomfield, J. J., and DallaValle, J. M.: The determination and control of industrial dust. *Pub. Health Bulletin No. 217* (1935).

⁴ Fraser, A. M.: The determination of mercury in air and in urine. *J. Ind. Hyg.*, **16**: 67 (1934).

EXPERIMENTAL

The samples were handled in batches of six. They were first transferred to Kjeldahl flasks and the alcohol was boiled off very rapidly. This took only 5 to 10 minutes. After allowing to cool, 10 cc of concentrated sulphuric acid and 4 grams of potassium permanganate were added. The necks of the flasks were washed down with water, and the samples were allowed to digest just under the boiling point for 2 hours. They were then decolorized with oxalic acid (about 3 grams are necessary). Unless the solution is cold, it is better to add the oxalic acid in small amounts during this operation. When the decolorization was nearly complete, the flasks were heated to about 70° C. and the addition of oxalic acid was continued until the solution became colorless.

The contents of the Kjeldahl flasks were next transferred to glass-stoppered Erlenmeyer flasks; 1 cc of 0.5 percent copper sulphate solution was added to each sample, and then hydrogen sulphide was passed in. The flasks were heated and the sulphiding was continued until the flasks had cooled. The precipitate of copper and mercury sulphides was allowed to stand overnight. It was then filtered and washed by centrifuging. Chlorine gas was then bubbled into the centrifuge cup containing the precipitate, to which 5 cc of water had been added. Solution was usually effected in 15 minutes, after which air was passed through to remove the chlorine.

These solutions were transferred to 50-cc beakers, and 2 cc of saturated oxalic acid plus 5 cc of 4 percent ammonium oxalate were added to each. The mercury was plated out using a pure gold cathode 1 by 3 cm and $\frac{1}{4}$ mm thick. The anode was platinum. The potential was kept at 1.3 to 1.5 volts, and the time was 18 to 24 hours. The gold electrode can be easily prepared in the laboratory. A piece of gold foil was cut to the above dimensions and was welded to a platinum wire by heating wire and foil in position on an anvil with a small flame, and then tapping gently with a small hammer. Care must be taken not to melt the gold by excessive heating. The set-up for the electrolysis consisted of a manifold of 6 sets of electrodes, and the source of current was 2 cells of a large lead storage battery with a variable resistance (such as is used in radio sets) in series.

Upon completion of electrolysis the cathode with the mercury and copper plated out on it was washed by dipping in water, alcohol, and ether successively. It was then hung up to dry for 5 minutes on a small rack consisting of a supported glass rod, and was weighed on a microbalance. A semi-microbalance can also be used.

After weighing the electrode it was placed in a Pyrex combustion tube through which a stream of hydrogen was passed. The tube was heated carefully and the mercury driven off. When the tube was

cold, the hydrogen was shut off. The electrode was removed and weighed, and the mercury was determined by difference.

Duplicate samples checked within 0.02 of a milligram. The mean and average deviation of 20 analyses of uncarroted fur dust, presumably Hg-free, was 0.020 ± 0.005 . This blank was subtracted from the other analytical values obtained.

The results of 10 analyses of pure solutions of mercuric nitrate of known concentration are shown in table 1.

TABLE 1.—*Analyses of solutions containing known amounts of mercury nitrate*

Milligrams of mercury	
Actually used	Found
0.150	0.140
0.150	.147
0.150	.154
0.150	.153
0.250	.250
0.200	.202
0.201	.190
0.050	.000
0.360	.359
0.180	.166

Table 2 gives the results of 10 analyses of samples of fur dust collected with the impinger apparatus in factory workrooms.

TABLE 2.—*Representative analyses of samples of carroted fur dust collected with the impinger*

Sample no.	Milligrams of mercury
1	0.20
2	.54
3	.45
4	.74
5	.03
6	.28
7	.13
8	.29
9	.17
10	.46

DEATHS DURING WEEK ENDED JAN. 30, 1937

(From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)

	Week ended Jan. 30, 1937	Corresponding week, 1936
Data from 85 large cities of the United States:		
Total deaths	10,682	10,579
Average for 3 prior years	8,811	
Total deaths, first 4 weeks of year	43,661	37,682
Deaths under 1 year of age	616	626
Average for 3 prior years	535	
Deaths under 1 year of age, first 4 weeks of year	2,593	2,261
Data from industrial insurance companies:		
Policies in force	60,041,422	67,819,150
Number of death claims	15,769	13,775
Death claims per 1,000 policies in force, annual rate	11.9	10.6
Death claims per 1,000 policies, first 4 weeks of year, annual rate	11.8	11.0

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers.

Reports for Weeks Ended Feb. 6, 1937, and Feb. 8, 1936

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Feb. 6, 1937, and Feb. 8, 1936

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Feb. 6, 1937	Week ended Feb. 8, 1936	Week ended Feb. 6, 1937	Week ended Feb. 8, 1936	Week ended Feb. 6, 1937	Week ended Feb. 8, 1936	Week ended Feb. 6, 1937	Week ended Feb. 8, 1936
New England States:								
Maine	1	2	1,688	3	26	424	0	2
New Hampshire			7		86	18	0	0
Vermont					4	191	0	0
Massachusetts	4	3			903	435	3	2
Rhode Island	1	1			198	99	0	0
Connecticut	3	1	536	4	346	124	1	1
Middle Atlantic States:								
New York	46	54	1,119	160	299	1,408	14	14
New Jersey	17	11	117	11	708	61	3	4
Pennsylvania	52	46			209	283	8	6
East North Central States:								
Ohio	46	27	242	20	66	181	7	7
Indiana	16	43	294	52	9	32	2	6
Illinois	46	36	275	43	11	30	9	15
Michigan	9	9	10	3	35	42	2	7
Wisconsin	1	4	1,028	56	23	81	1	2
West North Central States:								
Minnesota	4	4	4		29	120	0	2
Iowa	4	6	425	6	3	11	3	8
Missouri	25	22	1,487	184	15	17	7	8
North Dakota		2	363	3	1	1	4	0
South Dakota		5	94			4	2	1
Nebraska	7	2	48	5		51	0	1
Kansas	5	11	2,326	68	3	16	5	5
South Atlantic States:								
Delaware	1		7		173	74	0	0
Maryland ¹	8	5	398	7	309	112	5	11
District of Columbia	14	12	42	1	32	7	6	4
Virginia	31	22			163	37	5	11
West Virginia	21	17	1,313	151	10	2	5	2
North Carolina ¹	36	23	27	67	156	28	5	2
South Carolina ¹	3	2	968	1,009	40	10	2	2
Georgia ¹	8	10	763	490			4	0
Florida ¹	12	9	44	4	1	2	2	0
East South Central States:								
Kentucky		9		101		70		11
Tennessee ¹	19	10	720	176	14	29	4	6
Alabama	15	12	614	334	2	25	0	0
Mississippi ¹	8	8					1	0

See footnotes at end of table.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Feb. 6, 1937, and Feb. 8, 1936—Continued

Division and State	Diphtheria		Influenza		Measles		Meningoococcus meningitis	
	Week ended Feb. 6, 1937	Week ended Feb. 8, 1936	Week ended Feb. 6, 1937	Week ended Feb. 8, 1936	Week ended Feb. 6, 1937	Week ended Feb. 8, 1936	Week ended Feb. 6, 1937	Week ended Feb. 8, 1936
West South Central States:								
Arkansas	3	12	946	166	2	2	1	0
Louisiana	14	13	201	31	6	96	0	0
Oklahoma	10	9	874	285	4	1	4	7
Texas	60	48	4,481	491	426	126	8	9
Mountain States:								
Montana	2	6	1,035	6	19	20	1	1
Idaho	1	—	184	8	76	50	0	0
Wyoming	1	1	80	—	1	5	0	0
Colorado	5	3	—	—	5	34	1	0
New Mexico	5	7	244	2	20	9	0	0
Arizona	5	4	1,113	175	294	13	0	0
Utah	1	—	—	—	39	4	0	0
Pacific States:								
Washington	5	1	430	—	42	182	2	9
Oregon	1	5	1,111	33	11	616	1	1
California	33	46	7,762	522	91	1,336	9	9
Total	609	583	32,510	4,577	4,930	6,519	137	165
First 5 weeks of year	3,097	3,568	140,620	15,717	21,618	28,462	679	881

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Feb. 6, 1937	Week ended Feb. 8, 1936	Week ended Feb. 6, 1937	Week ended Feb. 8, 1936	Week ended Feb. 6, 1937	Week ended Feb. 8, 1936	Week ended Feb. 6, 1937	Week ended Feb. 8, 1936
New England States:								
Maine	0	0	25	47	0	0	2	0
New Hampshire	0	0	6	6	0	0	0	0
Vermont	0	2	81	16	0	0	0	0
Massachusetts	0	0	264	250	0	0	0	0
Rhode Island	0	0	64	30	0	0	0	1
Connecticut	0	0	106	69	0	0	0	2
Middle Atlantic States:								
New York	1	1	763	955	2	0	11	7
New Jersey	1	0	161	276	0	0	1	1
Pennsylvania	1	2	496	452	0	0	8	4
East North Central States:								
Ohio	0	0	408	304	9	3	3	8
Indiana	0	0	197	355	5	0	0	2
Illinois	1	0	628	756	31	12	6	3
Michigan	2	1	500	250	1	1	8	4
Wisconsin	0	0	285	646	21	11	1	4
West North Central States:								
Minnesota	0	0	151	315	3	12	0	1
Iowa	0	0	236	182	43	25	0	0
Missouri	0	4	268	145	63	17	2	0
North Dakota	0	0	40	86	13	2	1	1
South Dakota	0	0	75	30	11	14	0	0
Nebraska	0	0	79	188	4	53	0	0
Kansas	1	1	329	209	29	10	0	0
South Atlantic States:								
Delaware	0	0	6	7	0	0	0	0
Maryland	0	0	41	73	0	0	3	1
District of Columbia	0	1	13	30	0	0	0	0
Virginia	1	0	45	40	0	0	12	0
West Virginia	1	1	46	42	0	0	5	2
North Carolina	0	0	40	28	1	0	6	4
South Carolina	0	0	10	3	0	0	2	1
Georgia	6	0	20	19	0	0	3	1
Florida	0	0	7	8	0	0	0	0

See footnotes at end of table.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Feb. 6, 1937, and Feb. 8, 1936—Continued

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Feb. 6, 1937	Week ended Feb. 8, 1936	Week ended Feb. 6, 1937	Week ended Feb. 8, 1936	Week ended Feb. 6, 1937	Week ended Feb. 8, 1936	Week ended Feb. 6, 1937	Week ended Feb. 8, 1936
East South Central States:								
Kentucky ⁴		0		39		0		5
Tennessee	0	0	19	37	1	0	0	3
Alabama ⁵	0	1	19	22	1	2	4	1
Mississippi ⁵	3	0	7	11	1	0	1	1
West South Central States:								
Arkansas	2	0	10	18	2	0	1	1
Louisiana	0	0	5	15	0	0	6	2
Oklahoma ⁴	0	1	34	21	0	2	7	2
Texas ⁵	1	0	102	82	7	0	8	2
Mountain States:								
Montana	0	0	60	126	14	11	0	4
Idaho	0	0	13	75	8	2	0	2
Wyoming	0	0	15	101	11	5	1	0
Colorado	0	0	84	238	2	23	0	1
New Mexico	0	0	24	47	2	0	3	1
Arizona	0	0	22	22	0	0	0	0
Utah ⁵	0	0	23	133	0	0	0	0
Pacific States:								
Washington	0	0	28	86	0	12	1	2
Oregon	0	1	45	45	20	2	0	0
California	2	2	273	421	8	0	4	2
Total	23	18	6,183	7,326	313	219	116	85
First 5 weeks of year	123	91	29,800	36,656	1,457	1,082	603	531

¹ New York City only.

² Week ended earlier than Saturday.

³ Typhus fever, week ended Feb. 6, 1937, 12 cases, as follows: North Carolina, 3; South Carolina, 1;

Georgia, 3; Florida, 1; Alabama, 2; Texas, 2.

⁴ Report for week ended Feb. 6, 1937, not received.

⁵ Exclusive of Oklahoma City and Tulsa.

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week:

State	Menin- gococ- cus menin- gitis	Diph- theria	Influ- enza	Mala- ria	Measles	Pel- lagra	Poli- omyel- itis	Scarlet fever	Small- pox	Ty- phoid fever
<i>November 1936</i>										
Puerto Rico		46	63	924	98		1	1	0	148
<i>December 1936</i>										
Wisconsin	4	37	1,010		130		1	1,250	55	3
<i>January 1937</i>										
Arkansas	3	16	1,225	22	2	14	4	51		15
Connecticut	5	13	3,133		1,087		0	350	0	2
Delaware		11	160	1	592		0	52	0	1
North Carolina	13	168	231		273	11	2	216	2	22

November 1936		January 1937		January 1937—Continued	
	Cases		Cases		Cases
Puerto Rico:		Anthrax:		Ophthalmia neonatorum:	
Chicken pox	3	Delaware	1	Connecticut	2
Dysentery	16	Arkansas	50	North Carolina	2
Filariasis	2	Connecticut	804	Paratyphoid fever:	
Leprosy	2	Delaware	94	Connecticut	2
Mumps	4	North Carolina	671	Septic sore throat:	
Ophthalmia neonatorum	1	Conjunctivitis:		Connecticut	31
Puerperal septicemia	8	Connecticut	6	North Carolina	12
Tetanus	7	Dysentery:		Trachoma:	
Tetanus, infantile	1	Connecticut (bacillary)	1	Arkansas	1
Undulant fever	1	North Carolina (bacillary)	1	Trichinosis:	
Whooping cough	49	Encephalitis, epidemic or		Connecticut	2
		lethargic:		Tularemia:	
		Connecticut	1	Arkansas	3
		German measles:		North Carolina	4
		Connecticut	43	Typhus fever:	
		Delaware	1	Connecticut	1
		North Carolina	93	North Carolina	4
		Lead poisoning:		Undulant fever:	
		Connecticut	1	Connecticut	8
		Mumps:		North Carolina	2
		Arkansas	20	Whooping cough:	
		Connecticut	479	Arkansas	13
		Delaware	6	Connecticut	378
				Delaware	22
				North Carolina	250

December 1936

	Cases		Cases		Cases
Wisconsin:					
Chicken pox	2,676				
Dysentery (amoebic)	1				
Encephalitis, epidemic					
or lethargic	2				
German measles	52				
Mumps	642				
Septic sore throat	19				
Tularemia	10				
Undulant fever	8				
Whooping cough	537				

WEEKLY REPORTS FROM CITIES

City reports for week ended Jan. 30, 1937

This table summarizes the reports received weekly from a selected list of 140 cities for the purpose of showing a cross section of the current urban incidence of the communicable diseases listed in the table. Weekly reports are received from about 700 cities, from which the data are tabulated and filed for reference.

State and city	Diph- theria cases	Influenza		Meas- sles cases	Pneu- monia deaths	Scar- let fever cases	Small- pox cases	Tuber- culosis deaths	Ty- phoid fever cases	Whoop- ing cough cases	Deaths, all causes
		Cases	Deaths								
Maine:											
Portland	0	1	0	0	2	4	0	0	0	4	32
New Hampshire:											
Concord	0	—	1	0	3	1	0	0	0	0	22
Manchester	0	—	1	0	1	0	0	1	0	0	13
Nashua	0	—	—	0	1	0	0	—	0	0	—
Vermont:											
Barre	—	—	—	—	—	—	—	—	—	—	—
Burlington	0	—	0	0	0	5	0	0	0	1	19
Rutland	0	—	0	1	1	0	0	0	0	0	6
Massachusetts:											
Boston	3	—	8	8	49	59	0	6	0	188	244
Fall River	0	—	4	6	5	5	0	2	0	6	43
Springfield	0	—	0	40	0	5	0	1	0	21	41
Worcester	1	—	1	108	16	6	0	3	0	32	68
Rhode Island:											
Pawtucket	0	—	0	16	0	1	0	0	0	0	31
Providence	0	—	1	75	8	54	0	0	0	20	68
Connecticut:											
Bridgeport	0	45	5	81	4	15	0	0	0	2	62
Hartford	0	205	0	2	7	13	0	1	0	3	58
New Haven	0	90	2	1	9	3	0	0	0	5	64
New York:											
Buffalo	1	17	12	54	37	29	0	4	0	43	207
New York	35	206	26	56	203	257	0	83	2	72	4,680
Rochester	0	15	2	1	12	3	0	0	0	34	91
Syracuse	0	—	—	19	—	48	0	—	0	18	—
New Jersey:											
Camden	1	5	0	0	7	12	0	2	0	3	37
Newark	0	22	3	189	25	7	0	5	0	23	125
Trenton	0	3	5	0	2	4	0	2	0	1	41
Pennsylvania:											
Philadelphia	10	131	22	3	66	168	0	36	0	125	656
Pittsburgh	6	68	28	7	45	37	0	11	0	30	278
Reading	0	—	2	2	2	15	0	0	0	49	27
Scranton	0	—	—	1	—	18	0	—	0	1	—
Ohio:											
Cincinnati	8	21	11	22	24	25	0	8	0	18	173
Cleveland	4	323	11	5	38	74	0	17	0	58	239
Columbus	2	5	5	2	9	6	0	2	0	10	105
Toledo	2	6	3	2	11	15	0	3	0	26	80

City reports for week ended Jan. 30, 1937—Continued

State and city	Diph- theria cases	Influenza		Meas- sles cases	Pneu- monia deaths	Scar- let fever cases	Small- pox cases	Tuber- culosis deaths	Ty- phoid fever cases	Whoop- ing cough cases	Deaths, all causes
		Cases	Deaths								
Indiana:											
Anderson	0		0	2	3	4	0	1	0	0	10
Fort Wayne	1		1	0	8	3	0	0	0	0	36
Indianapolis	1		5	4	29	22	0	2	0	15	129
Muncie	0	15	0	0	3	5	0	0	0	1	7
South Bend	0		1	0	5	5	0	1	0	1	22
Terre Haute	13		0	0	0	4	0	0	0	0	31
Illinois:											
Alton	0	16	1	0	4	2	0	0	0	0	14
Chicago	8	55	14	9	46	198	0	43	0	95	707
Elgin	0		0	0	2	0	0	0	0	9	11
Moline	1	7	1	0	4	1	0	0	0	15	13
Springfield	1		0	0	5	4	0	0	0	15	21
Michigan:											
Detroit	11	15	13	5	42	307	0	18	1	82	339
Flint	1		0	17	5	19	0	2	0	0	20
Grand Rapids	0	15	2	9	2	11	0	0	0	26	38
Wisconsin:											
Kenosha	0	3	1	0	3	8	0	0	0	2	13
Madison	0		0	2	1	3	0	1	0	4	22
Milwaukee	0	7	3	1	6	48	0	6	0	32	116
Racine	0	1	1	2	0	6	0	0	0	0	16
Superior	0		3	0	0	6	0	0	0	12	17
Minnesota:											
Duluth	0		3	1	9	17	0	0	0	3	38
Minneapolis	1		7	1	21	7	0	2	0	6	122
St. Paul	0	9	9	4	13	10	3	3	0	46	79
Iowa:											
Cedar Rapids	0		0		0	2	0	0	0	2	—
Davenport	0		0		0	3	0	0	0	0	—
Des Moines	0	136	0		0	17	0	0	0	0	58
Sioux City	0		0		0	14	3	0	0	0	—
Waterloo	0		0		0	8	0	0	0	13	—
Missouri:											
Kansas City	2		14	1	38	49	0	4	1	11	143
St. Joseph	0	59	0	0	7	7	50	0	0	0	22
St. Louis	10		5	1	34	51	4	4	0	48	297
North Dakota:											
Fargo	0		0	0	0	9	0	0	0	0	9
Grand Forks	0		0	0	0	0	1	0	0	0	—
Minot	0		0		0	1	0	0	1	0	6
South Dakota:											
Aberdeen	0		0		0	2	0	0	0	0	—
Sioux Falls	0		0	0	0	0	0	0	0	0	8
Nebraska:											
Omaha	0		6	0	13	5	0	0	0	6	65
Kansas:											
Lawrence	0	15	0	0	2	0	0	0	0	0	7
Topeka											
Wichita	1	3	1	1	10	3	0	0	0	0	33
Delaware:											
Wilmington	1		0	57	7	1	0	2	0	0	37
Maryland:											
Baltimore	8	151	11	263	41	18	0	15	0	85	268
Cumberland	0	5	0	0	4	0	0	0	0	0	13
Frederick	0	1	0	0	1	0	0	0	0	0	5
District of Columbia:											
Washington	7	130	8	32	41	16	0	10	0	31	235
Virginia:											
Lynchburg	2		0	10	4	0	0	0	0	2	16
Norfolk	0	61	2	2	4	3	0	2	0	2	26
Richmond	1		4	4	6	6	0	1	0	0	58
Roanoke	1		0	36	2	1	0	0	0	6	22
West Virginia:											
Charleston	0	9	1	0	1	0	0	0	0	0	10
Wheeling	0	1	0	1	5	1	0	1	0	2	20
North Carolina:											
Gastonia	0		0	0	1	0	0	0	0	0	—
Raleigh	0		0	0	0	0	0	1	0	0	17
Wilmington	0		0	0	0	1	0	0	0	0	14
Winston-Salem	0		0	1	3	3	0	3	0	2	24
South Carolina:											
Charleston	1	231	0	6	5	2	0	2	0	0	27
Columbia	0		0	0	3	0	0	0	0	0	27
Greenville	0		0	0	0	1	0	0	0	0	3

City reports for week ended Jan. 30, 1937—Continued

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Georgia:											
Atlanta	2	302	8	0	9	6	0	5	0	0	83
Brunswick	2	1	1	0	0	0	0	0	0	0	5
Savannah	1	33	2	0	1	1	0	1	0	3	28
Florida:											
Miami	1	12	2	3	0	2	0	6	0	0	39
St. Petersburg											
Tampa	6	2	1	0	1	1	0	0	0	1	18
Kentucky:											
Ashland											
Covington	0	2	0	0	4	4	0	1	1	0	20
Lexington	0	15	0	2	2	0	0	3	0	0	25
Tennessee:											
Knoxville	2	104	8	0	10	2	0	0	0	0	37
Memphis	3	2	1	13	4	0	0	4	0	6	67
Nashville	2	—	1	0	11	4	0	2	0	0	69
Alabama:											
Birmingham	1	111	2	0	5	4	0	2	0	3	61
Mobile	0	7	0	0	4	2	0	3	0	0	20
Montgomery	0	—	—	0	—	1	0	—	0	0	—
Arkansas:											
Fort Smith	0	—	—	0	—	1	0	—	0	0	—
Little Rock	0	28	0	0	11	1	0	1	0	0	14
Louisiana:											
Lake Charles	0	—	0	0	1	0	0	0	0	1	5
New Orleans	6	132	6	0	28	2	0	11	0	1	178
Shreveport	0	—	1	0	13	0	0	1	1	0	57
Oklahoma:											
Muskogee	1	—	—	0	—	3	0	—	0	0	—
Oklahoma City	1	24	0	0	18	0	0	5	1	0	65
Tulsa	0	—	—	2	—	7	0	—	0	1	—
Texas:											
Dallas	7	11	7	6	13	8	0	3	1	1	71
Fort Worth	0	—	6	48	2	2	0	0	0	3	46
Galveston	0	—	0	0	2	1	0	1	0	0	21
Houston	2	—	2	0	8	3	0	5	0	2	83
San Antonio	2	—	9	3	11	0	0	10	0	1	99
Montana:											
Billings	0	—	0	0	3	0	0	0	0	0	15
Great Falls	0	—	6	0	3	0	0	0	0	0	12
Helena	0	—	0	2	4	7	0	0	0	0	9
Missoula	0	167	0	0	4	0	0	0	0	0	12
Idaho:											
Boise	0	—	0	1	5	1	0	0	0	0	13
Colorado:											
Colorado Springs	0	—	2	0	3	10	0	3	0	0	19
Denver	5	—	11	2	25	14	0	5	0	38	137
Pueblo	0	—	1	0	3	4	0	0	0	1	13
New Mexico:											
Albuquerque	0	—	0	0	3	2	0	3	0	0	11
Utah:											
Salt Lake City	0	—	5	23	7	6	0	2	0	6	57
Nevada:											
Reno	—	—	—	—	—	—	—	—	—	—	—
Washington:											
Seattle	1	261	12	6	23	4	0	1	0	5	114
Spokane	0	5	5	0	8	5	0	2	0	0	52
Tacoma	0	—	5	0	5	4	0	0	0	0	44
Oregon:											
Portland	0	488	18	0	18	2	0	0	1	0	146
Salem	0	160	—	0	—	1	0	—	0	0	—
California:											
Los Angeles	8	1,523	29	5	92	44	1	25	2	50	571
Sacramento	2	615	6	0	8	20	0	1	0	2	53
San Francisco	2	737	27	8	54	23	0	13	0	11	334

City reports for week ended Jan. 30, 1937—Continued

State and city	Meningococcus meningitis		Polio-myelitis cases	State and city	Meningococcus meningitis		Polio-myelitis cases
	Cases	Deaths			Cases	Deaths	
Massachusetts:				Nebraska:			
Fall River	1	1	0	Omaha	1	0	0
Rhode Island:				Maryland:	2	2	0
Providence	1	0	0	Baltimore			
New York:				District of Columbia:	2	1	0
Buffalo	0	1	0	Washington			
New York	5	2	0	Norfolk	1	0	0
Rochester	0	1	0	North Carolina:	1	1	0
Pennsylvania:				Raleigh			
Pittsburgh	2	0	0	South Carolina:	1	0	0
Ohio:				Greenville			
Cincinnati	1	3	0	Tennessee:			
Cleveland	2	1	0	Knoxville	2	1	0
Indiana:				Louisiana:			
Indianapolis	1	0	0	Shreveport	0	3	0
Illinois:				Texas:			
Chicago	1	2	0	Dallas	1	0	0
Michigan:				Houston	1	0	0
Detroit	1	2	1	San Antonio	1	0	0
Flint	0	0	1	Montana:			
Iowa:				Billings	0	1	0
Cedar Rapids	1	0	0	Colorado:			
Missouri:				Denver	1	0	0
Kansas City	1	2	0	Washington:			
St. Joseph	1	0	0	Spokane	1	1	0
St. Louis	1	0	0	California:			
South Dakota:				Los Angeles	3	2	1
Aberdeen	0	0	1				

Encephalitis, epidemic or lethargic.—Cases: New York, 1; Rochester, 1; Milwaukee, 1; Wichita, 1; Charleston, S. C., 1; San Francisco, 1.

Pellagra.—Cases: Boston, 1; St. Louis, 1; Charleston, S. C., 2; Brunswick, 1; Savannah, 1; Mobile, 1; New Orleans, 1; Los Angeles, 1.

Typhus fever.—Cases: Raleigh, 2; Montgomery, 2.

FOREIGN AND INSULAR

ITALY

Communicable diseases—4 weeks ended December 6, 1936.—During the 4 weeks ended December 6, 1936, cases of certain communicable diseases were reported in Italy as follows:

Disease	Nov. 9-15		Nov. 16-22		Nov. 23-29		Nov. 30-Dec. 6	
	Cases	Communes affected	Cases	Communes affected	Cases	Communes affected	Cases	Communes affected
Anthrax	22	22	20	19	24	23	16	16
Cerebrospinal meningitis	15	13	19	18	12	11	15	12
Chicken pox	271	121	483	172	474	172	539	172
Diphtheria and croup	646	332	620	335	683	374	644	333
Dysentery	11	11	7	6	7	7	11	6
Hookworm disease	14	4	6	4	14	6	4	4
Lethargic encephalitis	1	1	2	1	3	3	4	4
Measles	927	177	1,067	178	1,270	200	966	181
Mumps	230	66	331	87	332	84	453	91
Paratyphoid fever	52	43	57	42	34	28	46	39
Pollomyleitis	38	29	32	31	28	25	18	16
Puerperal fever	41	41	55	52	42	40	47	44
Scarlet fever	407	157	381	169	394	166	437	171
Typhoid fever	508	258	462	255	405	229	335	217
Undulant fever	32	26	44	37	45	35	26	23
Whooping cough	238	88	368	105	384	103	345	108

JAMAICA

Communicable diseases—4 weeks ended January 23, 1937.—During the 4 weeks ended January 23, 1937, cases of certain communicable diseases were reported in Kingston, Jamaica, and in the island outside of Kingston, as follows:

Disease	Kingston	Other localities	Disease	Kingston	Other localities
Chicken pox	2	8	Meningitis		1
Diphtheria	2		Scarlet fever	2	
Dysentery	4	7	Tuberculosis	22	69
Erysipelas		1	Typhoid fever	6	35
Leprosy		2			

NORWAY

Communicable diseases—1934.—The numbers of cases of and deaths from certain communicable diseases reported in Norway in 1934 are shown in the following table:

Disease	Cases	Deaths	Disease	Cases	Deaths
Cerebrospinal meningitis	25	12	Pollomyleitis	359	60
Diphtheria and croup	1,324	30	Scarlet fever	2,951	17
Dysentery	78	4	Typhoid and paratyphoid fever	124	21
Influenza	24,875	48	Whooping cough	6,367	45
Measles	9,470	61			

Vital statistics—1934.—The following table shows the number of births and deaths reported in Norway during 1934, together with death rates from certain diseases:

Births.....	41,833
Birth rate per 1,000 population.....	14.6
Deaths.....	28,340
Death rate per 1,000 population.....	9.9
Death rates per 100,000 population from—	
Apoplexy.....	85.3
Arteriosclerosis.....	62.3
Cancer.....	131.4
Diabetes.....	9.3
Nephritis.....	28.1
Tuberculosis.....	112.6

SWEDEN

Notifiable diseases—December 1936.—During the month of December 1936, cases of certain notifiable diseases were reported in Sweden as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis.....	3	Poliomylitis.....	1,125
Diphtheria.....	51	Scarlet fever.....	833
Dysentery.....	25	Typhoid fever.....	9
Epidemic encephalitis.....	6	Undulant fever.....	21
Paratyphoid fever.....	14	Well's disease.....	1

¹ Includes 22 cases nonparalytic at time of notification.

SWITZERLAND

Communicable diseases—1936.—During the year 1936, cases of certain communicable diseases were reported in Switzerland as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis.....	30	Mumps.....	1,066
Chicken pox.....	1,212	Paratyphoid fever.....	44
Diphtheria and croup.....	1,069	Poliomyelitis.....	1,260
Dysentery.....	1	Scarlet fever.....	1,282
German measles.....	178	Trachoma.....	3
Influenza.....	1,291	Tuberculosis.....	3,726
Lethargic encephalitis.....	9	Typhoid fever.....	85
Measles.....	14,064	Whooping cough.....	1,694

¹ In addition epidemics of these diseases occurred, with incomplete reporting of cases.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

NOTE.—A table giving current information of the world prevalence of quarantinable diseases appeared in the PUBLIC HEALTH REPORTS for January 29, 1937, pages 143-155. A similar cumulative table will appear in the PUBLIC HEALTH REPORTS to be issued February 26, 1937, and thereafter, at least for the time being, in the issue published on the last Friday of each month.

Cholera

Siam.—Further information, dated January 20, 1937, regarding the epidemic of cholera in Siam states that there have been 389 cases with 233 deaths since January 1, 1937, making a total of 602 cases with 377 deaths officially reported since the beginning of the outbreak. In Bangkok, 36 new cases with 19 deaths were officially reported from January 1-20, 1937. It is stated that a large proportion of the foreign population have been inoculated and that the Government is conducting a vigorous campaign against the disease.

Plague

Hawaii Territory—Island of Hawaii—Hamakua District—Paauhau Sector.—Two rats found February 5, 1937, and one rat found February 6, 1937, in Paauhau Sector, Hamakua District, island of Hawaii, Hawaii Territory, have been found plague infected.

Northern Rhodesia.—An epizootic of plague with human cases was reported January 20, 1937, in Balovale and Mulobezi, Barotseland, Northern Rhodesia.

Peru.—During the month of December 1936 plague was reported in Peru, as follows: Lambayeque Department, 1 case; Libertad Department, 14 cases, 3 deaths; Lima Department, 1 case, 1 death.

Smallpox

Iraq.—During the week ended January 9, 1937, one case of smallpox was reported in Iraq.

Typhus fever

Eritrea—Asmara.—During the week ended January 16, 1937, 13 cases of typhus fever were reported in Asmara, Eritrea.

Yellow fever

Colombia—Barrancabermeja.—The American consul at Bogota, Colombia, under date of February 6, 1937, reports a case of yellow fever at Barrancabermeja, a port on the Magdalena River. It was stated that the disease was contracted in a village 30 kilometers distant and developed while the patient was visiting in Barrancabermeja. Representatives of the Rockefeller Foundation reported that *Stegomyia (Aëdes)* mosquitoes were found in 15 percent of the houses in the Colombian section of the town, which was said to be a normal percentage in that region. Antimosquito measures were being taken. The American section was said to be free from yellow fever bearing mosquitoes.